

SAKIGAKE

85-001A-00A  
ISAS-Provided Orbit Data

85-001A-02A  
64-s Plasma Data

85-001A-03A  
4-sec Magnetic Field Data

These data sets consists of 1 Compact Disks. The Kd and KW numbers along with the time spans are as follows:

KD013811 KW000099

ORBIT 01/21/85 - 10/17/92

SOW 02/21/85

IMF 02/19/85 - 10/09/97

From: SMTP%"king@ndadsb-f.gsfc.nasa.gov" 13-AUG-2001 18:30:39.89  
To: POST  
CC:  
Subject: new Sakigake data sets

Message-ID: <3B78557C.9A24755A@ndadsb-f.gsfc.nasa.gov>  
Date: Mon, 13 Aug 2001 18:32:36 -0400  
From: "Joseph H. King" <king@ndadsb-f.gsfc.nasa.gov>  
Reply-To: king@ndadsb-f.gsfc.nasa.gov  
Organization: nasa/nssdc  
X-Mailer: Mozilla 4.7C-CCK-MCD {C-UDP; EBM-APPLE} (Macintosh; I; PPC)  
X-Accept-Language: en  
MIME-Version: 1.0  
To: post@ndadsb-f.gsfc.nasa.gov, patross@ndadsb-f.gsfc.nasa.gov,  
banderson@ndadsb-f.gsfc.nasa.gov  
CC: Joe King <joseph.h.king@gsfc.nasa.gov>,  
Natalia Papatashvili <natasha@mail630.gsfc.nasa.gov>  
Subject: new Sakigake data sets  
Content-Type: text/plain; charset=us-ascii; x-mac-type="54455854"; x-mac-creato  
Content-Transfer-Encoding: 7bit

The new Sakigake CD-ROM that I gave Ralph today  
has 3 directories corresponding to 3 new AIM/NSSDC  
data sets.

Directory MAG becomes 1985-001A-03A.  
Directory SOW becomes 1985-001A-02A  
Directory Orbit becomes 1985-001A-00D

Do we still reserve -00A, -00B and -00C) for specific  
ephemeris data sets types? If not, then the last of  
these 3 could be -00A instead of -00C)

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DS -03A:

name: 4-sec magnetic field data

bd: This data set consists of 40-sec averaged magnetic field  
vectors computed and given every 4 seconds. The records,  
in ASCII, contain time tags and field cartesian components  
in spacecraft-centered solar ecliptic coordinates. (Trajectory  
data are given in data set 1985-001A-00D which was  
provided to NSSDC on the same CD-R as held these field  
data plus the SOW plasma data.) For two intervals when  
the spacecraft was close to Earth (launch to June 16, 1986,  
and December 12, 1991 to February 13, 1992), data are  
also given as 10-s averages every 0.125-s point. Data  
coverage was about 30% in early years and decreased later.  
The data set was provided to NSSDC in 2001 by Drs.  
Nakagawa, Abe and Oyama of ISAS in Japan.

discipline keyword: SPHE

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DS -02A

name: 64-sec plasma data

bd: This data set consists of solar wind plasma parameters (proton density, flow speed, temperature and flow azimuth) given once every 64 seconds. The records contain, in ASCII, time tags and the plasma parameter values. (Trajectory data are given in data set 1985-001A-00D which was provided to NSSDC on the same CD-R as held these plasma data plus the magnetic field data.). Data coverage was about 30% in the early years and decreased thereafter. The data set was provided to NSSDC in 2001 by Drs. Nakagawa, Abe and Oyama of ISAS in Japan.

discipline keyword: SPHE

---

DS -00D

name: ISAS-provided orbit data

bd: This ASCII data set has several trajectory files at daily or 12-hour resolution (for solar wind times) or 1-hour resolution (for magnetospheric times: January 6-8, 1992, and September 26-28, 1992). The solar wind data are given in heliocentric (ecliptic for 1985-7 and 1991-4, equatorial only for 1991-4) and geocentric (solar ecliptic: 1991-4 only), while the two magnetospheric intervals are given in GSE and GSM coordinates. All the data are Cartesian components. Data for other periods are available at <http://nssdc.gsfc.nasa.gov/space/helios/heli.html>.

discipline keyword (do we have one for "orbit data"? if so, pls use; if not use SPHE)

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acquisition scientist for all these: NEP

**Subject:****Resent-Date:** Wed, 11 Jul 2001 10:10:38 -0400**Resent-From:** [king@ndadsb-f.gsfc.nasa.gov](mailto:king@ndadsb-f.gsfc.nasa.gov)**Resent-To:** [king@mail630.gsfc.nasa.gov](mailto:king@mail630.gsfc.nasa.gov)**Date:** Wed, 11 Jul 2001 23:13:46 +0900 (JST)**From:** "t.nakagawa" <[nakagawa@tohtech.ac.jp](mailto:nakagawa@tohtech.ac.jp)>

Dear Dr.King,

I am Tomoko Nakagawa, writing to you for Dr.Oyama to inform you about the SAKIGAKE magnetic field data.

The data set is installed in a workstation in ISAS  
capella.ted.isas.ac.jp

by courtesy of Dr. Takumi Abe (ISAS).

It was first designed so that any user can get the data through internet (telnet/ftp), but now it is difficult for users outside of ISAS (including myself) to obtain the data through ftp because of the existence of a firewall.

Please contact Dr.Abe to find best way to transform the data set to NSSDC.

Tomoko Nakagawa,  
Tohoku Institute of Technology  
[nakagawa@tohtech.ac.jp](mailto:nakagawa@tohtech.ac.jp)  
FAX 81-22-228-1351

-----  
Following are description of the SAKIGAKE IMF data.

The data parameters in the records are;  
year,month,day,hour,minute,second,  
Bx,By,Bz components [nT] of the magnetic field.  
The coordinate system is  
the spacecraft-centered solar ecliptic system;  
x:toward the sun from the spacecraft,  
y:opposite to planetary motion,  
z:perpendicular to the ecliptic plane.

example:

yy	mm	dd	hr	mn	second	Bx	By	Bz[nT]
93	6	3	4	21	38.598	1.14	-4.48	-3.47
93	6	3	4	21	42.598	1.21	-4.36	-3.65
93	6	3	4	21	46.598	1.23	-4.42	-3.61
93	6	3	4	21	50.598	1.25	-4.43	-3.50

Magnetic field data are

40-second averages(for 4-second intervals) or  
10-second averages(for 0.125-second intervals).

The time resolution depends on the bitrate of telemetry of the spacecraft.

Use of High bit rate was limited within the periods from the launch to June 16, 1985, and from December 12, 1992, to February 13, 1992, when the spacecraft was close to the Earth.

During the periods, hours of 10-second averages follows hours of 40-sec averages nearly every day.

Start of the data set is: 1985 February 19, and  
End of the data set is: 1997 October 01.

The data were mainly obtained in the solar wind except for January 6-8, 1992 and

September 26-28, 1992 when the spacecraft was in the earth's magnetosphere.

The data format is ascii.

data coverage was less than 30% of a day in the early years, and it decreased later because we had to share 64 antenna with other spacecraft.

The total size of the data is roughly 1GB.

A data file is produced for 1 revolution of the spacecraft.

That is, a file contains about 2 - 6 hours of data.

( Real data and DR/reproduction data are separated in each files. )

However, the data files sometimes duplicate, so we have a tool "IMF" to get data in time sequence (see below).

---- procedure to get time sequence data (in ISAS ) ---

```
% ssh -l sakigake capella.ted.isas.ac.jp
```

```
capella%
```

```
capella% cd imf
```

```
capella% ls
```

```
1985          1992          1997          finddupl.c    readme.t5
1986          1993          IMF          printimf.c
1987          1994          LST1        printimf.out
1988          1995          LST1.org    readme.eng
1991          1996          checkimf.c  readme.jpe
```

```
capella% IMF
```

By typing

```
IMF yymmdd [hhmmss [YMMDD [HHMMSS]]]
```

you can obtain the magnetic field data

year,month,day,hour,minute,second,Bx,By,Bz components [nT]

in the spacecraft-centered solar ecliptic system,

obtained by SAKIGAKE mainly in the solar wind

during the period from 850219 to 971009

except for January 6-8, 1992 and September 26-28, 1992

when the spacecraft was in the earth's magnetosphere.

example:

```
capella% IMF 930603 0040000 930604 000000
93 6 3 4 21 38.598 1.14 -4.48 -3.47
93 6 3 4 21 42.598 1.21 -4.36 -3.65
93 6 3 4 21 46.598 1.23 -4.42 -3.61
93 6 3 4 21 50.598 1.25 -4.43 -3.50
93 6 3 4 21 54.598 1.16 -4.26 -3.28
93 6 3 4 21 58.598 1.18 -4.23 -3.15
93 6 3 4 22 2.598 1.20 -4.21 -3.26
```

A command "IMF" is the output utility of the magnetic field data obtained by "SAKIGAKE". By specifying start/end, date/time, you can obtain the data of the period.

```
"Form" IMF yymmdd [hhmmss [YMMDD [HHMMSS]]]
```

```
"Argument" yymmdd hhmmss : Start time year[yy],month[mm],day[dd]
hour[hh],minute[mm],second[ss]
```

```
YMMDD HHMMSS : End time year[YY],month[MM],day[DD]
hour[HH],minute[MM],second[SS]
```

ex. IMF 910212 120000 910213 220000  
(February 12, 1991 from 12:00:00 UT to February 13, 1991  
22:00:00 UT. )

Following are also accepted.

IMF yymmss  
(It is equivalent to IMF yymmss 000000 yymmss 235959)  
IMF yymmss hhmmss  
(It is equivalent to IMF yymmss hhmmss yymmss 235959)  
IMF yymmss hhmmss YMMSS  
(It is equivalent to IMF yymmss hhmmss YMMSS 235959)

capella% IMF 920304  
92 3 4 0 16 15.203 -5.30 7.63 -0.22  
92 3 4 0 16 19.203 -4.97 7.63 -0.27  
92 3 4 0 16 23.203 -4.72 7.71 -0.69  
92 3 4 0 16 27.203 -4.73 7.82 -0.97  
92 3 4 0 16 31.202 -4.73 8.01 -0.90  
92 3 4 0 16 35.202 -4.59 8.00 -0.81

capella% IMF 850416 000000 851231 000000 > (filename)

-----  
The orbit data of "SAKIGAKE"  
during the periods from '85 Jan.21 to '87 Dec 31,  
(orb8587\_eclp) and from '91 Sep.1 to '94 Aug 31  
(orb9194\_eclp) in ecliptic coordinate system are  
available in the directory "/sakigake/orb".

capella% cd orbit  
capella% ls  
orb8587\_eclp orb9194\_eclp orb92ja\_GSE orb92ja\_eclp orb92sp\_GSM  
orb9194\_GSE orb9194\_eqtr orb92ja\_GSM orb92sp\_GSE orb92sp\_eclp

capella% head orb8587\_eclp  
1985 1 21 0 0 -0.7311640000D+08 0.1242057800D+09 -0.8232881900D+06  
-0.7559857600D+08 0.1263250900D+09 0.4729233400D+03  
1985 1 22 0 0 -0.7517158400D+08 0.1226950900D+09 -0.8837359400D+06  
-0.7783832000D+08 0.1249737600D+09 0.5041411100D+03  
1985 1 23 0 0 -0.7720192000D+08 0.1211437400D+09 -0.9438331900D+06  
-0.8005372800D+08 0.1235834900D+09 0.5147634300D+03  
1985 1 24 0 0 -0.7920656000D+08 0.1195520600D+09 -0.1003565700D+07  
-0.8224406400D+08 0.1221547700D+09 0.5047048300D+03  
1985 1 25 0 0 -0.8118472000D+08 0.1179203700D+09 -0.1062917000D+07  
-0.8440865600D+08 0.1206880600D+09 0.4748371600D+03

capella% head orb9194\_eclp  
1991 9 1 0 0 0.1302871798D+09 -0.4199606035D+08 0.2747723027D+07  
0.1394927499D+09 -0.5779604862D+08 -0.2800830442D+04  
1991 9 1 12 0 0.1308290181D+09 -0.4076583392D+08 0.2769342384D+07  
0.1399597614D+09 -0.5660989131D+08 -0.2746482639D+04  
1991 9 2 0 0 0.1313582724D+09 -0.3953168787D+08 0.2790694814D+07  
0.1404167275D+09 -0.5541960046D+08 -0.2688008534D+04  
1991 9 2 12 0 0.1318749319D+09 -0.3829375294D+08 0.2811779121D+07  
0.1408636046D+09 -0.5422525683D+08 -0.2625939449D+04  
1991 9 3 0 0 0.1323789871D+09 -0.3705215946D+08 0.2832594153D+07  
0.1413003495D+09 -0.5302694243D+08 -0.2560878961D+04

capella% head orb9194\_eqtr  
1991 9 1 0 0 0.1302871798D+09 -0.3962361463D+08 -0.1418408369D+08  
0.1394927499D+09 -0.5302572560D+08 -0.2299251332D+08  
1991 9 1 12 0 0.1308290181D+09 -0.3850350360D+08 -0.1367489244D+08  
0.1399597614D+09 -0.5193746912D+08 -0.2252063726D+08

```
1991 9 2 0 0 0.1313582724D+09 -0.3737969020D+08 -0.1316438695D+08
0.1404167275D+09 -0.5084542184D+08 -0.2204711319D+08
```

```
capella% head orb9194_eqGSE
```

```
1 9 1 0 0 0.1455233377D+08 -0.1107301902D+08 0.2750523857D+07
1 9 1 12 0 0.1440548931D+08 -0.1126439082D+08 0.2772088867D+07
1991 9 2 0 0 0.1425871162D+08 -0.1145297199D+08 0.2793382823D+07
1991 9 2 12 0 0.1411199459D+08 -0.1163875746D+08 0.2814405060D+07
1991 9 3 0 0 0.1396533657D+08 -0.1182175055D+08 0.2835155032D+07
1991 9 3 12 0 0.1381873512D+08 -0.1200195108D+08 0.2855632218D+07
```

```
capella% head orb92ja_eclp
```

```
1992 1 6 0 0 -0.3685224930D+08 0.1430593965D+09 0.1427034050D+06
-0.3639168000D+08 0.1425323096D+09 0.2870582411D+04
1992 1 6 1 0 -0.3694977050D+08 0.1430257852D+09 0.1400311033D+06
-0.3649736000D+08 0.1425053796D+09 0.2851093484D+04
1992 1 6 2 0 -0.3704727520D+08 0.1429919717D+09 0.1374087603D+06
-0.3660303000D+08 0.1424782543D+09 0.2883635512D+04
```

```
capella% cd
```

```
capella% pwd
```

```
/export/home/sakigake
```

-----

The solar wind parameters obtained by SOW onboard "SAKIGAKE" (1991-1997) are available in the directory "/sakigake/sow" .

```
capella% cd sow
```

```
capella% ls
```

```
sow91.data    sow93.data    sow95.data    sow97.data
sow92.data    sow94.data    sow96.data    sowdata.doc
```

```
capella% cat sowdata.doc
```

```
sowdata.doc (by Tomoko Nakagawa, Jan 27, 1999)
```

```
--
SAKIGAKE solar wind plasma data obtained by SOW experiment
consists of PassNumber (usually no use),
month,day, time(hr:min:sec),
solar wind ion density N (/cc),
solar wind bulk speed V (km/s),
solar wind ion temperature Ti (K), and
solar wind flow direction measured from the sun-s/c line.
The flow direction is calculated by assuming the speed of the
spacecraft going around the Sun to be 28km/s.
```

```
--
example: sow95.data
```

PASSNUMBER	MON	DAY	N	V	Ti	flow direction
		HHMMSS	(/cc)	(km/s)	( K )	(degree)
10105010	1	5 100738	1.7	557.8	122000.	1.3
10105010	1	5 115138	1.8	506.1	104000.	-2.5
10105010	1	5 115242	1.6	524.4	112000.	-2.4
10105010	1	5 115346	1.9	522.8	176000.	-1.7
10105010	1	5 120634	1.6	511.3	106000.	-3.8
10105010	1	5 120738	1.5	519.7	96000.	-3.8
10105010	1	5 120842	1.6	521.6	174000.	-1.3
10105010	1	5 122234	1.4	544.7	112000.	-1.5
10109010	1	9 63803	2.1	527.8	130000.	-0.2

```
capella% head sow91.data
```

```
829010 8 30 4702 11.0 343.0 70000. 0.0
70829010 8 30 21918 10.7 343.0 49000. 0.0
70829010 8 30 23446 11.5 351.0 59000. 0.0
70829010 8 30 24942 11.5 368.0 75000. 0.0
70829010 8 30 25046 9.4 368.0 42000. 0.0
```

```
capella% tail sow97.data
30901010  9  1  71915  5.8 304.8  30000. -0.7
30901010  9  1  73411  5.6 301.8  30000.  1.4
30912010  9 12  64328  4.3 455.5 132000.  1.0
 912010   9 12  65840  3.7 401.3  80000. -1.5
 J912010  9 12  71336  3.7 407.3  82000. -1.8
30912010  9 12  74224  3.9 402.3  94000.  0.6
-----
```

SOW. 45. DATA

Untitled

8502210070.	0.0	430.	0.	1.0
8502250649.	7.5	434.	114000.	-5.1
8502250650.	7.0	432.	138000.	-5.1
8502260070.	0.0	373.	0.	0.0
8502280060.	0.0	373.	0.	0.0
8503010060.	0.0	373.	0.	0.0
8503040723.	2.4	494.	72000.	-4.1
8503040724.	2.4	491.	54000.	-5.1
8503050727.	5.7	553.	376000.	-5.1
8503050728.	5.4	544.	294000.	-6.1
8503060060.	0.0	430.	0.	0.0
8503080060.	0.0	430.	0.	0.0
8503110717.	1.3	475.	200000.	-5.1
8503110719.	1.2	468.	150000.	-5.1
8503130070.	0.0	430.	0.	0.0
8503140941.	3.2	438.	114000.	-5.1
8503140943.	2.5	440.	84000.	-5.1
8503150756.	5.2	448.	228000.	-5.1
8503150802.	5.3	451.	262000.	-5.1
8503180726.	5.4	438.	82000.	-5.1
8503180802.	6.6	442.	90000.	-5.1
8503220070.	0.0	373.	0.	0.0
8503250070.	0.0	373.	0.	0.0
8503260070.	0.0	430.	0.	0.0
8503270070.	0.0	430.	0.	0.0
8503280070.	0.0	430.	0.	0.0
8503290829.	3.6	454.	142000.	-5.1
8504010649.	6.7	478.	148000.	-4.1
8504010651.	6.5	478.	140000.	-5.1